MECHANICAL SYMBOLS LEGEND
(AS APPLICABLE)

PIPING AND SPECIALTIES

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
RD	REFRIGERANT DISCHARGE	PGR	PROPYLENE GLYCOL RETURN		INLINE PUMP
RL	REFRIGERANT LIQUID	PGS	PROPYLENE GLYCOL SUPPLY	MV	AIR VENT - MANUAL
RS	REFRIGERANT SUCTION	FOR	FUEL OIL RETURN		
CD	COIL CONDENSATE DRAIN	FOS	FUEL OIL SUPPLY	A	AIR VENT - AUTOMATIC
LPS (XX)	LOW PRESSURE STEAM (PRESSURE)	FOV	FUEL OIL VENT	FS	FLOW SWITCH
MPS (XX)	MEDIUM PRESSURE STEAM (PRESSURE)	CR	CONDENSER WATER RETURN	PS	PRESSURE SWITCH
HPS (XX)	HIGH PRESSURE STEAM (PRESSURE)	CS	CONDENSER WATER SUPPLY	AS	AIR SEPARATOR
LPC	LOW PRESSURE CONDENSATE	HPWR	HEAT PUMP WATER RETURN		
MPC	MEDIUM PRESSURE CONDENSATE	HPWS	HEAT PUMP WATER SUPPLY		THERMOMETER
HPC	HIGH PRESSURE CONDENSATE	D / R	PITCH OF PIPE, RISE (R) OR DROP (D)	TW	THERMOMETER WELL
PC	PUMPED CONDENSATE		PIPE ANCHOR - MAIN		
MU	MAKE-UP WATER		PIPE ANCHOR - INTERMEDIATE		BALL JOINT
HCR	HOT/CHILLED WATER RETURN	H	HANGER - ROD	PSU	PUMP SUCTION DIFFUSER
HCS	HOT/CHILLED WATER SUPPLY	H	HANGER - SPRING		FLOAT THERMOSTATIC TRAP
HWR	HEATING WATER RETURN		ALIGNMENT GUIDE		FLOWMETER - ORIFICE
HWS	HEATING WATER SUPPLY		FLEX CONNECTOR		FLOWMETER - VENTURI
CWR	CHILLED WATER RETURN		EXPANSION - LOOP		DUPLEX STRAINER
CWS	CHILLED WATER SUPPLY		EXPANSION - JOINT		
EGR	ETHYLENE GLYCOL RETURN				
EGS	ETHYLENE GLYCOL SUPPLY				

DUCTWORK

	SUPPLY, OUTSIDE OR MIXED AIR DUCT (UP)	10/6	RECTANGULAR DUCT (WIDTH/HEIGHT)
	SUPPLY, OUTSIDE OR MIXED AIR DUCT (DOWN)	10Ø	ROUND DUCT (DIAMETER)
	SUPPLY, OUTSIDE OR MIXED AIR DUCT (SECTION)	10/6Ø	FLAT OVAL DUCT (WIDTH/HEIGHT)
	RETURN AIR DUCT (UP)		FLEXIBLE DUCTWORK TO EQUIPMENT
	RETURN AIR DUCT (DOWN)		INSULATED FLEXIBLE DUCTWORK
	RETURN AIR DUCT (SECTION)	R	ELEVATION CHANGE (RISE OR DROP)
	RELIEF OR EXHAUST AIR DUCT (UP)		HIGH EFF. TAKE OFF FITTING WITH VOLUME DAMPER
	RELIEF OR EXHAUST AIR DUCT (DOWN)	BD	BACKDRAFT DAMPER
	RELIEF OR EXHAUST AIR DUCT (SECTION)		TURNING VANES
	ROUND DUCT (UP)	VD	VOLUME CONTROL DAMPER
	ROUND DUCT (DOWN)		VOLUME CONTROL DAMPER
	ROUND DUCT (SECTION)	CAP	DUCT END CAP

	OPPOSED BLADE DAMPER		SUPPLY DIFFUSER
	PARALLEL BLADE DAMPER		SUPPLY REGISTER
FD	FIRE DAMPER (IN HORIZONTAL DUCT)		SUPPLY SLOT DIFFUSER
SD	SMOKE DAMPER (IN HORIZONTAL DUCT)		RETURN REGISTER
FD	FIRE DAMPER (IN VERTICAL DUCT)		RETURN GRILLE
SD	SMOKE DAMPER (IN VERTICAL DUCT)		EXHAUST REGISTER
FSD	FIRE/SMOKE DAMPER (IN HORIZONTAL DUCT)		EXHAUST GRILLE
FSD	FIRE/SMOKE DAMPER (IN VERTICAL DUCT)		DUAL DUCT TERMINAL UNIT
AD	DUCT ACCESS PANEL		
RP	RELIEF PANEL		

H.V.A.C.

	VAV TERMINAL UNIT	T	THERMOSTAT
	FAN POWERED VAV TERMINAL UNIT	T G	THERMOSTAT WITH GUARD
	SIDE WALL DIFFUSER	XX-X	TEMPERATURE SENSOR - XX-X DENOTES SERVED
	ROUND DIFFUSER	CO	CARBON MONOXIDE SENSOR
	EXTERIOR LOUVER	CO_2	CARBON DIOXIDE SENSOR
X CFM	SUPPLY IDENTIFICATION TAG X DENOTES TYPE	NOX	NITROGEN DIOXIDE SENSOR
X CFM	RETURN/ EXHAUST/LOUVER IDENTIFICATION TAG X DENOTES TYPE	H	HUMIDITY SENSOR
M	MOTORIZED ACTUATOR	P	PRESSURE SENSOR
	PNEUMATIC ACTUATOR	S	TEMPERATURE SENSOR WITH GUARD
		H	HUMIDISTAT
			EMERGENCY SHUTDOWN SWITCH

PLUMBING

	DOMESTIC COLD WATER PIPING	AW	ACID WASTE BELOW FLOOR OR GRADE
	DOMESTIC HOT WATER SUPPLY	AW	EXIST ACID WASTE BELOW FLOOR/GRADE
	DOMESTIC HOT WATER RECIRC.	AW	ACID WASTE ABOVE FLOOR OR GRADE
	PIPE REMOVAL	GW	GREASE WASTE BELOW FLOOR OR GRADE
SAN	SANITARY BELOW FLOOR OR GRADE	GW	EXIST GREASE WASTE BELOW FLOOR/GRADE
SAN	EXISTING SANITARY BELOW FLOOR/GRADE	GW	GREASE WASTE ABOVE FLOOR OR GRADE
SAN	SANITARY ABOVE FLOOR OR GRADE	OSW	OIL/SAND BELOW FLOOR OR GRADE
ST	STORM BELOW FLOOR OR GRADE	OSW	EXISTING OIL/SAND BELOW FLOOR/GRADE
ST	EXISTING STORM BELOW FLOOR/GRADE	DSW	OIL/SAND ABOVE FLOOR OR GRADE
ST	STORM ABOVE FLOOR OR GRADE	SCW	SOFTENED COLD WATER PIPING
SO	STORM OVERFLOW BELOW FLOOR/GRADE	PD	PUMPED DISCHARGE
SO	EXIST. STORM OVERFLOW BELOW FLOOR/GRADE	V	VENT PIPING
SO	STORM OVERFLOW ABOVE FLOOR/GRADE	AV	ACID VENT PIPING
		CA	COMPRESSED AIR

PA	PROCESSED AIR		
IR	IRRIGATION PIPING		
P	TRAP PRIMER		
G (XX)	NATURAL GAS PIPING (PSIG)		
HB	HOSE BIBB		
WH	WALL HYDRANT		
CO	CLEAN OUT		
FCO	FLOOR CLEAN OUT		
	FLOOR DRAIN		
VTR	VENT THRU ROOF (X DENOTES IDENTIFICATION)		
RD	ROOF DRAIN		
ORD	OVERFLOW ROOF DRAIN		
DSN	DOWNSPOUT NOZZLE		

VALVES

	GATE VALVE		STOP/CHECK GATE VALVE (ARROW IND. FLOW)
	ANGLE GATE VALVE		SPRING GATE CHECK VALVE (ARROW IND. FLOW)
	BALL VALVE		SWING GATE CHECK VALVE (ARROW IND. FLOW)
	LOCKABLE BALL VALVE		ANGLE STOP/CHECK VALVE
	BUTTERFLY VALVE		2-WAY ELECTROMOTOR VALVE
	GLOBE VALVE		2-WAY AIRMOTOR VALVE
	ANGLE GLOBE VALVE		2-WAY MANUAL VALVE
	PLUG VALVE		3-WAY ELECTROMOTOR VALVE
	DIAPHRAGM VALVE		3-WAY AIRMOTOR VALVE
	DIAPHRAGM ACTUATED VALVE		3-WAY MANUAL VALVE
	VALVE IN VERTICAL LINE		SAFETY PRESSURE RELIEF VALVE
	HOSE GATE VALVE		PRESSURE RELIEF VALVE
	HOSE GLOBE VALVE		TEMPERATURE MIXING VALVE
	HOSE ANGLE VALVE		AUTO FLOW VALVE
	SOLENOID VALVE		FLOAT VALVE
	POST INDICATOR VALVE		LOCK SHIELD
			CIRCUIT SETTER

	MULTIPURPOSE VALVE		
PRVXX	PRESSURE REDUCING VALVE		
PRVXX	PRESSURE REDUCING PILOT VALVE		
RPBF	REDUCED PRESS. BACKFLOW ASSY.		
DC	DOUBLE CHK VALVE BACKFLOW ASSY.		
DDC	DOUBLE DETECTOR CHECK VALVE		
	OUTSIDE STEM & YOKE VALVE		
	QUICK CLOSING FUSIBLE LINK VALVE		
	QUICK OPENING VALVE		
	PRESSURE GAUGE & BALL VALVE		
	GATE VALVE WITH GLOBE VALVE BY-PASS		
	GLOBE VALVE WITH GLOBE VALVE BY-PASS		
	SPRINKLER - CONCEALED		
	SPRINKLER - RECESSED		
	SPRINKLER - SIDEWALL		
	SPRINKLER - UPRIGHT		
	SPRINKLER - ZONE CONTROL		

FITTINGS

	ELBOW		ELBOW - DOUBLE BRANCH
	LONG RADIUS ELBOW		ELBOW - SIDE OUTLET UP
OR	SHORT RADIUS ELBOW		ELBOW - SIDE OUTLET DOWN
	45° ELBOW		ELBOW - OUTLET DOWN
	TEE		ELBOW - OUTLET UP
	CROSS		TEE - OUTLET DOWN
	LATERAL		TEE - OUTLET UP
			TEE - SIDE OUTLET DOWN
	TEE - SINGLE SWEEP		TEE - SIDE OUTLET UP
			SIAMESE CONNECTION

	REDUCER - CONCENTRIC		
	REDUCER - ECCENTRIC STRAIGHT INVERT		
	REDUCER - ECCENTRIC STRAIGHT CROWN		
	CAPPED CONNECTION		
	THREADED CONNECTION		
	FLANGED CONNECTION		
	STRAINER		
	STRAINER WITH BALL VALVE DRAIN		
	STRAINER WITH COUPLER		
	BUSHING		
	FLOW DIRECTION		

MISCELLANEOUS

XX / X	EQUIPMENT IDENTIFICATION TAG (ELECTRICAL CONNECTION REQUIRED)		NEW CONNECTION POINT
X / XX	DETAIL REFERENCE SHEET REFERENCE		POINT OF DISCONNECT
		OA	OUTSIDE AIR
		VA	VENTILATION AIR
X XX / X XX	SECTION CUT REFERENCE SHEET REFERENCE	EA	EXHAUST AIR
		RA	RELIEF OR RETURN AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	SA	SUPPLY AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	MA	MIXED AIR
	ELECTRICAL PANEL - SHOWN FOR COORDINATION PURPOSES ONLY	RF	RELIEF OR RETURN FAN
T	ELECTRICAL TRANSFORMER - SHOWN FOR COORDINATION PURPOSES ONLY	EF	EXHAUST FAN
		TYP	TYPICAL

WC	WATER CLOSET
UR	URINAL
L	LAVATORY
S	SINK
DF	DRINKING FOUNTAIN
EWC	ELECTRIC WATER COOLER
SS	SERVICE SINK
SH	SHOWER
DWH	DOMESTIC WATER HEATER
MSB	MOP SINK BASIN
	LIGHT LINEWORK = EXISTING OR DEMOLITION
	DARK LINEWORK = NEW

GENERAL MECHANICAL NOTES

A. LIGHT LINE WEIGHT INDICATES EXISTING ITEMS AND ASSOCIATED MATERIALS TO REMAIN. BOLD LINE WEIGHT INDICATES NEW WORK TO BE INSTALLED UNDER THIS CONTRACT.

B. ROUTING INDICATED ON DRAWINGS IS APPROXIMATE AND DOES NOT INCLUDE ALL OFFSETS, FITTINGS, VALVES, ETC. CONTRACTOR TO FIELD VERIFY DUCT SIZE AND SERVICE PRIOR TO FINAL CONNECTION. COORDINATE LOCATION OF HVAC WORK WITH LIGHTING, STRUCTURAL MEMBERS, PIPING SYSTEMS, ETC. PROVIDE OFFSETS AND CLEARANCES OR RELOCATE HVAC WORK AS REQUIRED TO AVOID CONFLICTS WITH WORK OF ALL OTHER TRADES.

C. HVAC WORK SHALL NOT BE LOCATED OVER ELECTRICAL, DATA, OR COMMUNICATION EQUIPMENT ROOMS. HVAC WORK SHALL NOT BE LOCATED ABOVE ELECTRICAL / DATA / COMMUNICATION EQUIPMENT OR PANELS.

D. SUPPORT ALL DUCTWORK, PIPING, EQUIPMENT, ETC. FROM BUILDING STRUCTURE. HOLD PIPING TIGHT TO BOTTOM OF STRUCTURAL MEMBERS OR RUN THROUGH JOIST WEBS IF POSSIBLE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING. DO NOT SUPPORT PIPING FROM OTHER PIPING, DUCTWORK AND/OR ELECTRICAL CONDUITS. DO NOT SUPPORT FROM BOTTOM OF CHORD OF BAR JOIST OR FROM METAL ROOF DECK.

E. LOCATE AND INSTALL EQUIPMENT TO PROVIDE ALL CODE AND MANUFACTURER'S RECOMMENDED CLEARANCES. KEEP HVAC PIPING, DUCTWORK, ETC. OUT OF CLEARANCE AREAS.

F. ALL OPENINGS IN WALLS AND FLOORS FOR PIPING SHALL BE CORE DRILLED OR SAW CUT, UNLESS OTHERWISE NOTED.

G. ALL HVAC PIPING WORK SHALL BE LOCATED ABOVE CEILINGS, IN A PIPE CHASE, OR OTHER CONCEALED LOCATIONS, UNLESS OTHERWISE NOTED. LOCATE AND ARRANGE VALVES, DRAIN FITTINGS, ETC. TO BE ACCESSIBLE THROUGH LAY–IN CEILINGS, ACCESS PANELS OR ACCESS DOORS. PROVIDE ACCESS PANEL OR ACCESS DOOR FOR ALL VALVES, DRAIN FITTINGS, ETC. AT NON–ACCESSIBLE LOCATIONS.

H. SLOPE HVAC PIPING TO DRAIN VALVES. PROVIDE MANUAL AIR VENTS AT HIGH POINTS AND AT TOP OF RISER.

I. ALL MECHANICAL WORK IN CEILING SPACE THAT IS NOT CONFINED BY TEMPORARY CONSTRUCTION WALLS SHALL REQUIRE THE USE OF DUST CARTS.

J. ALL WORK ASSOCIATED WITH THE SNOW MELT SYSTEM SHALL BE INCLUDED IN BID ALTERNATE NO. 1.

Revisions:	Date

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Drawing Title: MECHANICAL SYMBOLS LEGEND AND GENERAL NOTES

CONTRACT DOCUMENTS (CD-3) FINAL SUBMITTAL (100%)

Project Title: UPGRADE FORCE PROTECTION FRONT ENTRANCE

Location: VAMC Omaha Nebraska

Date: MAY 10, 2013 | Checked: MKL | Drawn: LMB

Project Number: 636-13-126

Building Number: ONE

Drawing Number: M0.1

Dwg. 12 of 18

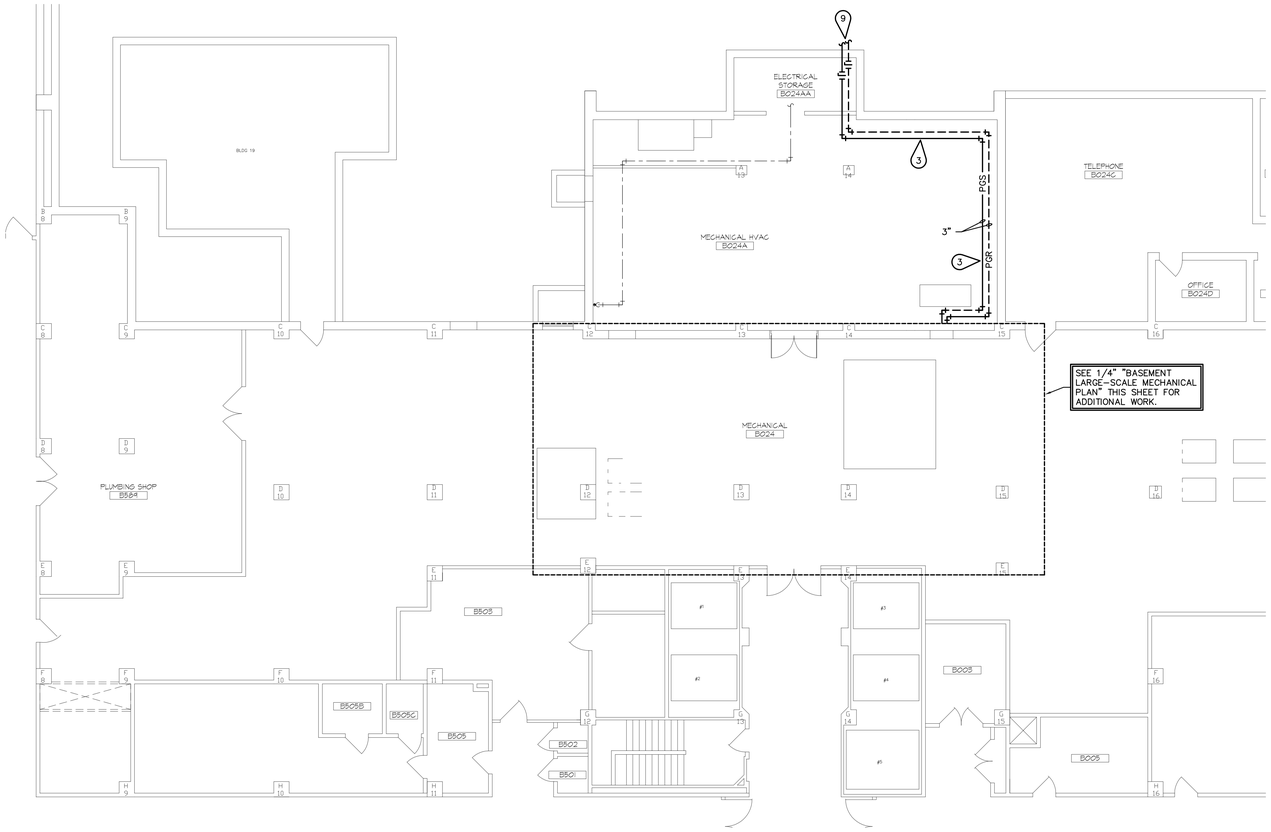
Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

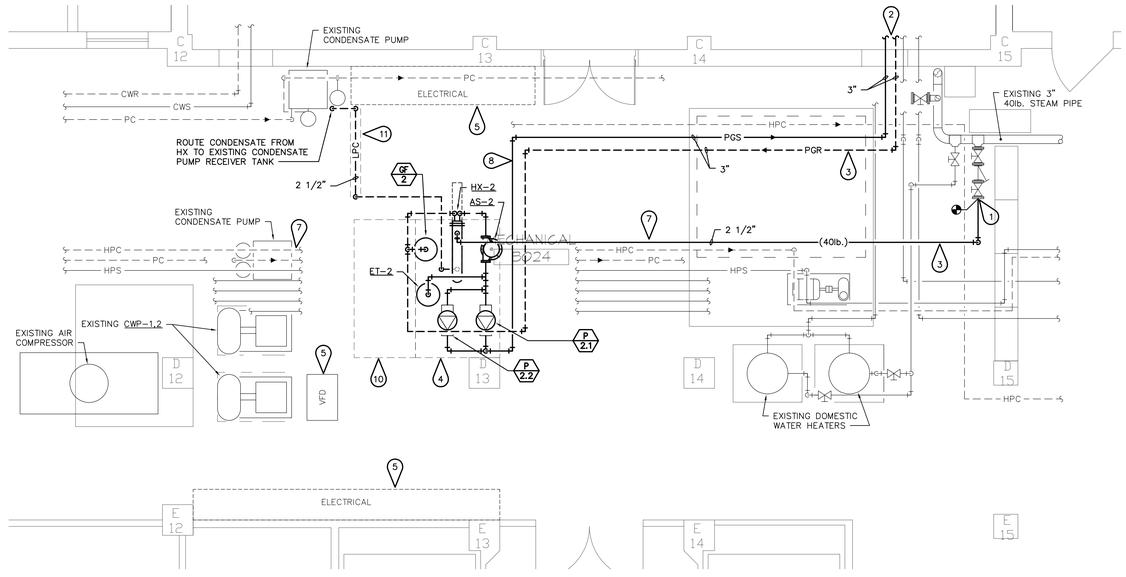
MECHANICAL KEYNOTES: (◇)

1. CONNECT NEW 2 1/2" 40lb. STEAM SUPPLY PIPE TO EXISTING VALVED AND CAPPED PIPE BRANCH.
2. REFER TO BASEMENT MECHANICAL PLAN, THIS SHEET, FOR CONTINUATION OF PIPING.
3. CONTRACTOR SHALL COORDINATE BEST ROUTING OF NEW PIPING IN THIS AREA WITH EXISTING CONDITIONS.
4. PUMPS P2.1, P2.2, HX–2, AS–2, ET–2, GF–2 AND ALL ASSOCIATED CONNECTED PIPING, VALVES, ETC. SHALL BE FACTORY ASSEMBLED ON A PRE–PACKAGED STEEL SKID. MAXIMUM SKID SIZE SHALL BE 4'–0" X 9'–0" X 5'–6" (HIGH). INSTALL SKID ON 4" THICK CONCRETE EQUIPMENT PAD. REFER TO **DETAIL 1/M3.1**.
5. MAINTAIN REQUIRED CLEARANCES IN FRONT OF ALL ELECTRICAL EQUIPMENT.
6. EXISTING OVERHEAD ELECTRICAL CONDUITS AT +6'–10" A.F.F.
7. EXISTING OVERHEAD STEAM AND CONDENSATE PIPING AT +6'–2" A.F.F.
8. MAINTAIN CLEARANCE OF +6'–2" A.F.F. (MIN.) ON ALL NEW PIPING INSTALLATIONS ABOVE WALKWAY AREAS IN THIS ROOM.
9. SEE SHEET M2.2 FOR CONTINUATION OF PIPING.
10. SPACE RESERVED FOR "MAIN ENTRANCE HVAC" PROJECT MECHANICAL EQUIPMENT.
11. INSTALL LPC PIPING ACROSS WALKWAY AREA IN PIPE TRENCH. SEE **DETAIL 4/M3.1**. COORDINATE WITH LPC PIPE FROM "MAIN ENTRANCE HVAC" PROJECT.



1 M2.1 BASEMENT MECHANICAL PLAN
SCALE: 1/8" = 1'–0"

PLAN NORTH



2 M2.1 BASEMENT LARGE–SCALE MECHANICAL PLAN
SCALE: 1/4" = 1'–0"

PLAN NORTH

Revisions:	Date

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Drawing Title: BASEMENT MECHANICAL PLANS

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Dwg. 13 of 18

Office of Construction and Facilities Management

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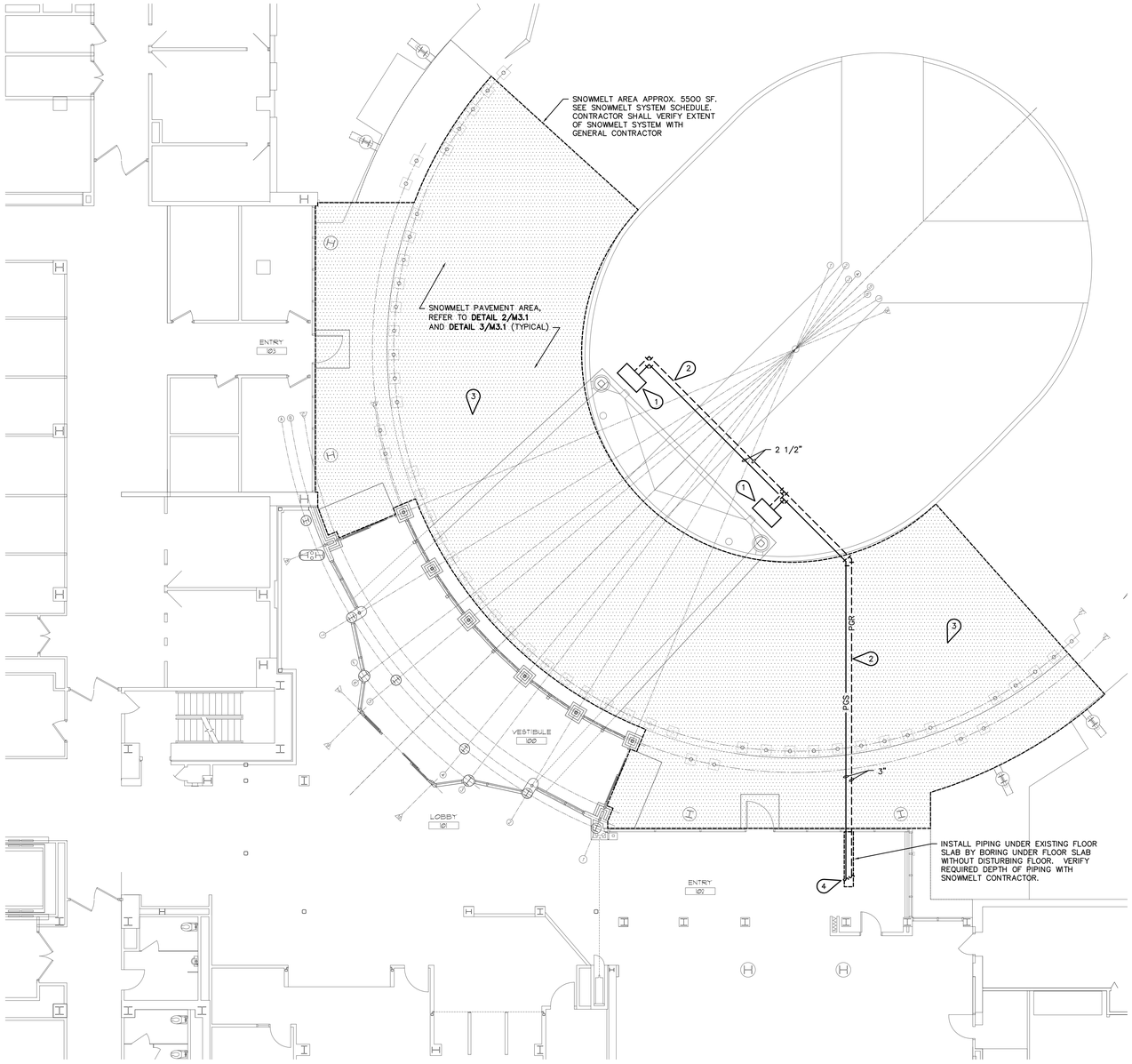

1 M2.2 FIRST FLOOR MECHANICAL PLAN
SCALE: 1/8" = 1'-0"

PLAN NORTH

MECHANICAL KEYNOTES: (◇)

1. SNOWMELT SYSTEM MANIFOLD BOX. SNOWMELT CONTRACTOR SHALL VERIFY BEST LOCATION FOR INSTALLATION OF MANIFOLD BOX IN THIS AREA WITH EXISTING CONDITIONS.
2. UNDERGROUND PGS/PGR PIPING SHALL BE FACTORY INSULATED PEX TUBING SPECIFICALLY DESIGNED FOR UNDERGROUND SNOWMELT INSTALLATIONS.
3. COORDINATE SNOWMELT PIPING INSTALLATION WITH PHASING OF DRIVE REPLACEMENT. SNOWMELT SYSTEM SHALL BE INSTALLED WITH (2) ZONES. EXACT EXTENT OF EACH ZONE SHALL BE COORDINATED WITH PHASING OF DRIVE REPLACEMENT.
4. SEE M2.1 FOR CONTINUATION OF PIPING.

TEMPERATURE CONTROL – SEQUENCE OF OPERATION:

1. GENERAL: EXISTING CONTROL SYSTEM IS AN ANDOVER SYSTEM MAINTAINED BY CSI OF OMAHA. ALL NEW EQUIPMENT SHALL INTERFACE WITH THE EXISTING BMS PER THE FOLLOWING SEQUENCES.
2. SNOW MELT SYSTEM: ALL OPERATIONS OF THE SNOW MELT SYSTEM SHALL BE CONTROLLED THROUGH THE SNOW MELT SYSTEM CONTROL PANEL. BMS SHALL CONTROL SNOW MELT SYSTEM ON/OFF AND SHALL MONITOR STATUS AND ALARMS.
3. GLYCOL FEEDER GF-2: BMS SHALL MONITOR STATUS AND LOW LEVEL ALARM.
4. SEE POINTS LIST ON M3.1.

three inches = one foot 6"
one and one half inches = one foot 1 6"
one inch = one foot 0 6"
three quarters inch = one foot 2 0 6"
one half inch = one foot 4 0
three eighths inch = one foot 4 0
one quarter inch = one foot 8 0
one eighth inch = one foot 16 0 4 8
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Dwg. 14 of 18

Office of Construction and Facilities Management
Department of Veterans Affairs

VA FORM 08-6231

MECHANICAL / ELECTRICAL COORDINATION SCHEDULE

ABBREVIATION:

E	ELECTRICAL CONTRACTOR	HP	HORSEPOWER	4X	NEMA 4X	V	VOLTAGE
M	MECHANICAL CONTRACTOR	KW	KILOWATTS	PH	PHASE	VFD	VARIABLE FREQUENCY
I	INTEGRAL WITH EQUIPMENT	MR	PER MANUFACTURER'S	RE	REVERSING		DRIVE
C	COMBINATION STARTER AND		RECOMMENDATION	RV	REDUCED VOLTAGE	2S	TWO SPEED
	SAFETY SWITCH	NF	NON-FUSED	SF	FUSE HOLDER WITH SWITCH	3S	THREE SPEED
CB	CIRCUIT BREAKER	NR	NON-REVERSING	SS	SAFETY SWITCH		
FV	FULL VOLTAGE	N1	NEMA 1	SH	HP RATED SWITCH		
FLA	FULL LOAD AMPS	3R	NEMA 3R	ST	THERMAL ELEM. SWITCH		

REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS

MARK	DESCRIPTION	RATING			DISCONNECT					MOTOR STARTER			NAMEPLATE	REMARKS
		LOAD	V	PH	FURNISH/ INSTALL BY	TYPE	RATING (AMPS)	FUSE SIZE	ENCL.	FURNISH/ INSTALL BY	TYPE/ NEMA SIZE	ENCL.	MINIMUM SCCR (AMPS)	
P-2.1	GLYCOL SNOW MELT PUMP	3 HP	208	3	E/E	C	30	MR	N1	E/E	FVNR #0	N1		
P-2.2	GLYCOL SNOW MELT PUMP	3 HP	208	3	E/E	C	30	MR	N1	E/E	FVNR #0	N1		
GF-2	SNOW MELT GLYCOL FEEDER	1/3 HP	120	1	E/E	SH	20	MR	N1	M/M	-	N1		

GENERAL NOTES:

A. VERIFY/COORDINATE ALL RATINGS FOR EQUIPMENT. WHERE SUCH RATINGS ARE OTHER THAN THAT INDICATED ON MECHANICAL/ELECTRICAL COORDINATION SCHEDULE, PROVIDE DISCONNECTS, MOTOR STARTERS, OVERCURRENT DEVICES AND RELATED REVISIONS ACCORDINGLY. WHERE EQUIPMENT IS PROVIDED WITH RATINGS OTHER THAN THAT INDICATED, CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION AND ASSOCIATED COSTS FOR REVISIONS.

B. PROVIDE FRACTIONAL HORSEPOWER MOTORS WITH INTEGRAL OVERLOAD PROTECTION.

C. EQUIPMENT LISTED IN SCHEDULE MAY APPEAR IN NUMEROUS LOCATIONS. EQUIPMENT MARKS ARE DESIGNATED BY UNIQUE IDENTIFIERS ON THE PLANS: I.E., HP-1.1, HP-1.2. IN THESE INSTANCES, THE ELECTRICAL REQUIREMENTS DO NOT CHANGE FROM ONE MARK TO THE NEXT, ONLY THE UNIQUE IDENTIFIER CHANGES.

D. HORSEPOWER RATED SWITCHES (SH): FOR 120 V MOTORS LESS THAN 1/2 HP, PROVIDE FUSEHOLDER WITH SWITCH, FUSED PER MANUFACTURER'S RECOMMENDATION AND NEC REQUIREMENTS. FOR 120 V MOTORS RATED 1/2 HP OR 3/4 HP, PROVIDE HP RATED TOGGLE SWITCH (WHERE BRANCH CIRCUIT OVERCURRENT DEVICE MEETS NEC REQUIREMENTS FOR SHORT-CIRCUIT PROTECTION) OR FUSED SAFETY SWITCH.

E. INDUSTRIAL CONTROL PANELS AS DEFINED BY NEC ARTICLE 409, MOTOR CONTROLLERS, HERMETIC REFRIGERANT MOTOR COMPRESSORS AND EQUIPMENT SHALL BE MARKED WITH INFORMATION AS REQUIRED BY THE NATIONAL ELECTRICAL CODE (NEC). MARK IN ACCORDANCE WITH NEC ARTICLE 409.110 FOR INDUSTRIAL CONTROL PANELS, NEC ARTICLE 430.8 FOR CONTROLLERS AND NEC ARTICLE 440.4(B) FOR HERMETIC REFRIGERANT MOTOR COMPRESSORS AND EQUIPMENT. THE MARKED SHORT CIRCUIT CURRENT RATING (SCCR) SHALL BE NO LESS THAN THE VALUE INDICATED ABOVE.

RADIANT SNOW MELT SYSTEM SCHEDULE

SERVES	TYPE	PIPING DEPTH	DISTRIBUTION PIPING	AREA (FT2)	SUPPLY FLUID (°F)	RETURN FLUID (°F)	GPM	HEAD (FT)	REQUIRED HEAT (BTUH)	MANUFACTURER	REMARKS
MAIN ENTRY DRIVE AND SIDEWALK - ZONE 1	PIPE EMBEDDED IN CONCRETE SLAB	2" (MIN.) - REMARK 5	(24) 250 FT CIRCUITS, 5/8" PEX-A O2 BARRIER, 6" SPACING	2,750	140	115	53	60	550,000	HEAT-LINK OR APPROVED EQUAL	1, 2, 3, 4, 5, 6
MAIN ENTRY DRIVE AND SIDEWALK - ZONE 2	PIPE EMBEDDED IN CONCRETE SLAB	2" (MIN.) - REMARK 5	(24) 250 FT CIRCUITS, 5/8" PEX-A O2 BARRIER, 6" SPACING	2,750	140	115	53	60	550,000	HEAT-LINK OR APPROVED EQUAL	1, 2, 3, 4, 5, 6

REMARKS:

1. WORKING FLUID SHALL BE 50% PROPYLENE GLYCOL SOLUTION.
2. PACKAGED SYSTEM SHALL BE A COMPLETE FACTORY ASSEMBLED SYSTEM PROVIDED BY TIGERFLOW OR APPROVED EQUAL INCLUDING HEAT EXCHANGER, PUMPS, EXPANSION TANK, GLYCOL FEEDER, STEAM CONTROL VALVE, SNOWLINE SENSOR, CONTROLS AND ASSOCIATED VALVES AND FITTINGS.
3. MANIFOLDS, MANIFOLD BOXES, LOOP BALANCING/ISOLATION VALVES, AND TUBING SHALL BE SHIPPED LOOSE FOR FIELD INSTALLATION.
4. SNOW MELT SYSTEM SHALL BE PROVIDED ONLY UNDER ALTERNATE #1.
5. DRIVE PAVING THICKNESS IS 7 INCHES. SIDEWALK PAVING THICKNESS IS 4 INCHES.
6. COORDINATE ZONING OF SNOW MELT SYSTEM WITH PHASING OF DRIVE REPLACEMENT.

PUMP SCHEDULE

MARK	SERVES	TYPE	GPM	HEAD FT.	RPM	MANUFACTURER & MODEL NO.	REMARKS
P-2.1	SNOW MELT SYSTEM	VERTICAL INLINE	105	50	1,750	PATTERSON MODEL V2C7A-CC 2X2X7.5	1, 2, 3, 4, 5
P-2.2	SNOW MELT SYSTEM	VERTICAL INLINE	105	50	1,750	PATTERSON MODEL V2C7A-CC 2X2X7.5	1, 2, 3, 4, 5

REMARKS:

1. SEE MECHANICAL/ELECTRICAL COORDINATION SCHEDULE FOR ELECTRICAL DATA.
2. PROVIDE WITH PREMIUM EFFICIENCY INVERTER-DUTY MOTOR.
3. PUMP SHALL BE MOUNTED ON FACTORY ASSEMBLED AND PACKAGED SKID BY TIGERFLOW OR APPROVED EQUAL.
4. PUMP WORKING FLUID SHALL BE 50% PROPYLENE GLYCOL.
5. PUMP SHALL BE PROVIDED ONLY UNDER ALTERNATE NO. 1.

SHELL AND TUBE HEAT EXCHANGER SCHEDULE

MARK	SERVES	TYPE	WATER SIDE (TUBES)				STEAM SIDE (SHELL)		MANUFACTURER & MODEL NO.	REMARKS
			GPM	E.W.T.	L.W.T.	P.D. (FT.)	PSIG	LB/HR		
HX-2	SNOW MELT SYSTEM	STEAM TO HOT WATER	105	105° F	140° F	2.0	40	1293	TRUSH MODEL S8-36-2A	1, 2, 3

REMARKS:

1. TUBESIDE WORKING FLUID SHALL BE 50% PROPYLENE GLYCOL.
2. HEAT EXCHANGER SHALL BE MOUNTED ON FACTORY ASSEMBLED AND PACKAGED SKID BY TIGERFLOW OR APPROVED EQUAL.
3. HEAT EXCHANGER SHALL BE PROVIDED ONLY UNDER ALTERNATE NO. 1.

HYDRONIC SYSTEM SPECIALTIES SCHEDULE

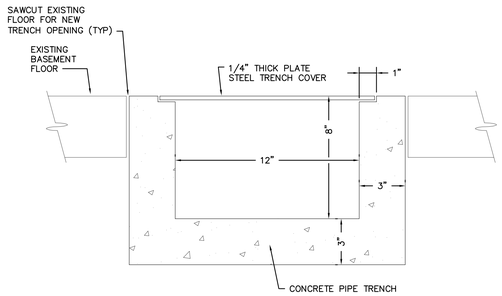
MARK	SERVES	TYPE	GPM	HEAD (FT)	GAL.	CONNECTION (IN)	MANUFACTURER & MODEL NO.	REMARKS
ET-2	SNOW MELT SYSTEM	BLADDER TYPE EXPANSION TANK	---	---	132	1-1/2	PATTERSON MODEL NLA-500	1, 2, 3
AS-2	SNOW MELT SYSTEM	COELESCING AIR SEPARATOR			---	3	THRUSH MODEL HVR-3	1, 3
GF-2	SNOW MELT SYSTEM	GLYCOL FEED SYSTEM	---	---	55	---	GENERAL TREATMENT PRODUCTS GP55-E4-1	1, 3
CF-1	SNOW MELT SYSTEM	CHEMICAL POT FEEDER	---	---	2	---	GENERAL TREATMENT PRODUCTS FB2/QC	1, 3

REMARKS:

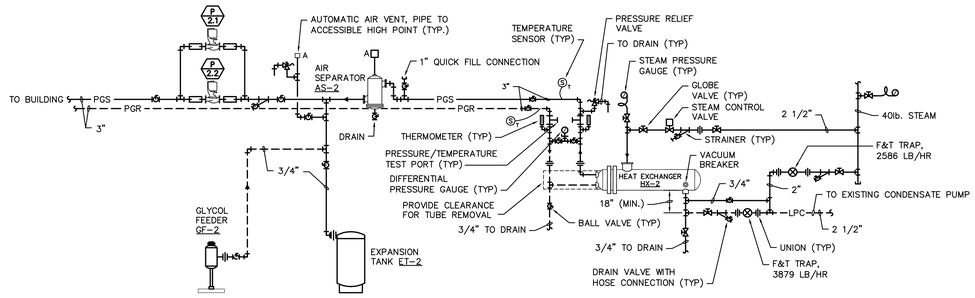
1. ALL EQUIPMENT SHALL BE MOUNTED ON A FACTORY PRE-ASSEMBLED SKID MANUFACTURED BY TIGERFLOW OR APPROVED EQUAL.
2. FULL ACCEPTANCE VOLUME INDICATED. ASME CERTIFIED TANK.
3. SNOW MELT SYSTEM SHALL BE PROVIDED ONLY UNDER ALTERNATE NO. 1.

SYSTEM/POINT DESCRIPTION	DEVICE TYPE	GRAPHIC DISPLAY	POINT TYPE	ALARM	TREND
SNOW MELT SYSTEM					
Pump Start/Stop	Relay - Equipment Start/Stop	Y	BO		X
Pump Status	Relay - Equipment Status (Current)	Y	BI	X	X
Hot Water Supply Temperature	Sensor - Temperature (Hydronic)	Y	AI		X
Hot Water Supply Temperature Setpoint	Software Point (i.e. setpoint)	Y	SW		
Hot Water Return Temperature	Sensor - Temperature (Hydronic)	Y	AI		X
Steam Control Valve	Actuator - Control Valve	Y	AO		X
Moisture Sensor	Misc. - Binary Input	Y	BI		X
Glycol Level	Switch - Level (Hydronic)	Y	BI	X	X

NOTES:
1. BI=BINARY INPUT, BO=BINARY OUTPUT, AI=ANALOG INPUT
AO=ANALOG OUTPUT, SW=SOFTWARE POINT

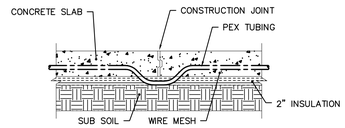


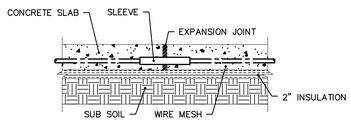
PIPE TRENCH DETAIL 4
NO SCALE



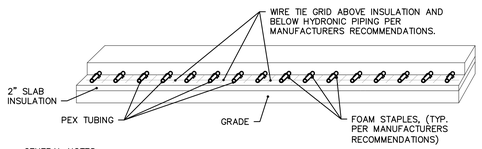
NOTE: ALL EQUIPMENT, CONNECTING PIPING, VALVES AND FITTINGS SHOWN SHALL BE FACTORY ASSEMBLED ON PRE-PACKAGED SKID.

SNOW MELT SYSTEM PIPING SCHEMATIC 1
NO SCALE





PAVEMENT SNOW MELT: CONSTRUCTION, EXPANSION AND CONTROL JOINTS 2
NO SCALE



GENERAL NOTES:

1. BASE MATERIAL MUST BE COMPACTED.
2. COVER TOP OF TUBING WITH A MINIMUM OF 2" OF CONCRETE.
3. SNOW MELT CONTRACTOR SHALL PROVIDE WIRE MESH TIE GRID, 2" RIGID INSULATION AND ALL OTHER ACCESSORIES REQUIRED OR RECOMMENDED BY THE SNOW MELT SYSTEM MANUFACTURER.

PAVEMENT SNOW MELT: TYPICAL HYDRONIC PIPING SECTION DETAIL 3
NO SCALE

Revisions: | Date

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Drawing Title: MECHANICAL DETAILS AND SCHEDULES

CONTRACT DOCUMENTS (CD-3) FINAL SUBMITTAL (100%)

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Dwg. 15 of 18

Office of Construction and Facilities Management
Department of Veterans Affairs

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ELECTRICAL SYMBOLS LEGEND
(AS APPLICABLE)

SWITCHING

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
$a	SINGLE POLE SWITCH - LETTER INDICATES SWITCH LEG	$M	MOMENTARY CONTACT SWITCH
$2	DOUBLE POLE SWITCH	$K	KEY OPERATED SWITCH
$3	THREE-WAY SWITCH	$P	PILOT LIGHT SWITCH
$4	FOUR-WAY SWITCH	$T	TIMER SWITCH
$D	DIMMER SWITCH	$OS	OCCUPANCY SENSOR - WALL SWITCH
$H	HORSEPOWER RATED SWITCH	OS	OCCUPANCY SENSOR - CEILING MOUNTED
$F	FUSED SWITCH	OS	OCCUPANCY SENSOR - WALL MOUNTED
$TE	THERMAL ELEMENT		DASHED LINE INDICATES GROUPS OF LUMINAIRES TO BE CONTROLLED BY OCCUPANCY SENSOR(S).
T	LOW VOLTAGE SWITCH - NUMBER INDICATES TYPE		

LIGHTING

	LUMINAIRE		WALL MOUNTED LUMINAIRE
	LUMINAIRE - LAMPS SWITCHED SEPARATE		WALL MOUNTED LUMINAIRE - NIGHT LIGHT
	LUMINAIRE WITH AUXILIARY LIGHT		WALL MOUNTED LUMINAIRE - EMERGENCY
	LUMINAIRE - EMERGENCY		EXIT SIGN
	LUMINAIRE - NIGHT LIGHT		PHOTOCELL, DAYLIGHT SENSOR
	WALL MOUNTED LUMINAIRE		EXTERIOR LUMINAIRE - POLE MOUNTED
	WALL MOUNTED LUMINAIRE - EMERGENCY	B	EXTERIOR LUMINAIRE - BOLLARD
	WALL MOUNTED LUMINAIRE - NIGHT LIGHT		EXTERIOR LUMINAIRE - POLE MOUNTED
	STRIP LUMINAIRE		EXTERIOR LUMINAIRE - BOLLARD
	STRIP LUMINAIRE - EMERGENCY		FLOOD LIGHT LUMINAIRE
	STRIP LUMINAIRE - NIGHT LIGHT		EMERGENCY BATTERY PACK
	LUMINAIRE		EMERGENCY LUMINAIRE REMOTE HEADS
	LUMINAIRE - NIGHT LIGHT		COMBINATION EXIT SIGN/EMERGENCY LIGHTING UNIT
	LUMINAIRE - EMERGENCY		TRACK LUMINAIRE

POWER DEVICES

	SINGLE RECEPTACLE		LIGHTING & APPLIANCE PANELBOARD
	DUPLEX RECEPTACLE		POWER DISTRIBUTION EQUIPMENT
	FOUR-PLEX RECEPTACLE - TWO DUPLEX RECEPTACLES	T	TRANSFORMER
	RANGE RECEPTACLE		ENCLOSED CIRCUIT BREAKER
	SPECIAL RECEPTACLE		CABINET (TYPE INDICATED)
G	DUPLEX RECEPTACLE - GROUND-FAULT CIRCUIT-INTERRUPTER		MOTOR STARTER, LIGHTING CONTACTOR
IG	DUPLEX RECEPTACLE - ISOLATED GROUND		SAFETY SWITCH
WR	DUPLEX RECEPTACLE - WEATHER-RESISTANT GROUND-FAULT CIRCUIT-INTERRUPTER		COMBINATION MOTOR STARTER & SAFETY SWITCH
A	DUPLEX RECEPTACLE - ON APPLIANCE CIRCUIT		MOTOR
T	DUPLEX RECEPTACLE - TAMPER-RESISTANT	J 6'	CORD DROP (J-BOX AT CEILING)
F	DUPLEX RECEPTACLE - ARC-FAULT RATED	6'	CORD DROP (SPECIAL RECEPTACLE AT CEILING)
M	DUPLEX RECEPTACLE - MOUNTED IN MILLWORK		MULTI-OUTLET ASSEMBLY
B	DUPLEX RECEPTACLE - MOUNTED BELOW COUNTER		FLUSH FLOOR BOX
	DUPLEX RECEPTACLE - CEILING MOUNTED		FLUSH POKE-THRU
	DUPLEX RECEPTACLE - BOTTOM HALF SWITCHED		DAMPER
	SPLIT-WIRE RECEPTACLE	S	SOLENOID
J	JUNCTION BOX		

RACEWAYS

	HOME RUN TO PANEL	T	TELEPHONE CONDUIT
	UNSWITCHED LIGHTING CIRCUIT		CONDUIT UP
	MASTER SATELLITE FIXTURE CONNECTION		CONDUIT DOWN
E	EMERGENCY CIRCUIT		CONDUIT SEAL
NL	NIGHT LIGHTING CIRCUIT		CABLE TRAY
S	SOUND SYSTEM RACEWAY	1"	CONDUIT SLEEVE (NUMBER INDICATES SIZE)

MISCELLANEOUS

XX Y	EQUIPMENT IDENTIFICATION TAG	NF	NON-FUSED
Y XXX	DETAIL REFERENCE / SHEET REFERENCE	WP	WEATHER-PROOF
FACP	FIRE ALARM CONTROL PANEL	WG	WIRE GUARD
FAAP	FIRE ALARM ANNUNCIATOR PANEL	XP	EXPLOSION PROOF
HOA	HAND-OFF-AUTO	30/3/10/3R	RATED AMPACITY/NO. POLES/FUSING REQ'D/NEMA ENCL. NO.
CCT.	CIRCUIT	X	PROJECTOR INPUT STATION - LETTER INDICATES TYPE
PART. CCT.	PARTIAL CIRCUIT		PROJECTOR CONTROL STATION
			LIGHT LINEWORK = EXISTING OR DEMOLITION
			DARK LINEWORK = NEW

COMMUNICATIONS

	TELEPHONE CABINET	C	CLOCK HANGER OUTLET
W	TELEPHONE OUTLET - WALL MOUNTED	C	CLOCK - WALL MOUNTED
#	TELEPHONE OUTLET BOX	C 2	CLOCK - CEILING MOUNTED (DOUBLE FACE)
#	DATA OUTLET BOX	CS	CLASSROOM CLOCK & SPEAKER
#	PHONE OUTLET BOX - CEILING MOUNTED	P	PROGRAM BELL
#	DATA OUTLET BOX - CEILING MOUNTED		INTERCOM CALL SWITCH
	COMBINATION TELEPHONE/DATA OUTLET BOX - ONE JACK EACH	X	INTERCOM ADMINISTRATION STATION (LETTER INDICATES TYPE)
	DATA OUTLET BOX - BLANK PLATE, 1" CONDUIT	X	INTERCOM CLASSROOM/STAFF STATION (LETTER INDICATES TYPE)
M #	MICROPHONE OUTLET (NUMBER INDICATES QUANTITY)	X	AUDIO/VISUAL AUXILIARY OUTLET (LETTER INDICATES TYPE)
M #	MICROPHONE OUTLET - WALL MOUNTED (NUMBER INDICATES QUANTITY)	A	T.V. ANTENNA OUTLET
L #	LINE INPUT OUTLET (NUMBER INDICATES QUANTITY)	V	INTERCOM/PAGING VOLUME CONTROL
L #	LINE INPUT OUTLET - WALL MOUNTED (NUMBER INDICATES QUANTITY)	V	SOUND SYSTEM VOLUME CONTROL
S	INTERCOM/PAGING SPEAKER - CEILING MOUNTED		GROUND BAR
S	INTERCOM/PAGING SPEAKER - WALL MOUNTED		NOTE: SYMBOLS SHOWN "STACKED" ON THE FLOOR PLANS INDICATE THAT THE DEVICES ARE TO BE LOCATED IN THE SAME OUTLET BOX AND FACEPLATE. (I.E. 1 / 2)
S	INTERCOM/PAGING SPEAKER HORN - WALL MOUNTED		
S	SOUND SYSTEM SPEAKER - CEILING MOUNTED		
S	SOUND SYSTEM SPEAKER - WALL MOUNTED		

NUMBER BY SYMBOL INDICATES QUANTITY OF JACKS. ZERO INDICATES EMPTY OUTLET BOX, BLANK PLATE AND CONDUIT.

FIRE ALARM

HD R/T	HEAT DETECTOR - COMBINATION		FIRE ALARM COMBINATION SPEAKER/VISUAL - WALL MOUNTED
HD F	HEAT DETECTOR - FIXED TEMPERATURE	F	FIRE ALARM BELL - WALL MOUNTED
HD EV	HEAT DETECTOR - FIXED TEMPERATURE (CONNECTED TO ELEVATOR RECALL)	F	FIRE ALARM HORN - CEILING MOUNTED
SD	SMOKE DETECTOR		FIRE ALARM VISUAL SIGNAL - CEILING MOUNTED
SD DM	SMOKE DETECTOR - DUCT MOUNTED		FIRE ALARM COMBINATION HORN/VISUAL - CEILING MOUNTED
SD EV	SMOKE DETECTOR (CONNECTED TO ELEVATOR RECALL)	F	FIRE ALARM SPEAKER - CEILING MOUNTED
F	FIRE ALARM MANUAL STATION		FIRE ALARM COMBINATION SPEAKER/VISUAL - CEILING MOUNTED
F	FIRE ALARM HORN - WALL MOUNTED		FLOW SWITCH
	FIRE ALARM VISUAL SIGNAL - WALL MOUNTED		TAMPER SWITCH
	FIRE ALARM COMBINATION HORN/VISUAL - WALL MOUNTED		DUCT DETECTOR REMOTE ALARM INDICATOR
F	FIRE ALARM SPEAKER - WALL MOUNTED	R	FAN SHUT-DOWN RELAY
			MAGNETIC DOOR HOLDER

SECURITY

	PUSHBUTTON STATION		MOTION DETECTOR
	PUSHBUTTON STATION, "P" INDICATES PILOT	KP	KEYPAD
	DOOR MONITOR SWITCH	ES	ELECTRIC STRIKE
	DOOR SWITCH	CR	CARD READER
	DOOR BELL CHIME/BUZZER	PS	POWER SUPPLY
	DOOR CONTACT		SECURITY CAMERA

GENERAL ELECTRICAL DEMOLITION NOTES

A. THE CONTRACTOR SHALL COMPLETELY REMOVE ALL ELECTRICAL WIRING, CONDUIT, SWITCHES, DISCONNECTS, LIGHTING FIXTURES AND OTHER ASSOCIATED ITEMS AS SHOWN. THE ITEMS INDICATED SPECIFICALLY ON THE DRAWINGS TO BE REMOVED ARE ONLY TO INDICATE IN GENERAL TO THE CONTRACTOR THE AMOUNT OF DEMOLITION WORK INVOLVED. A SITE INVESTIGATION BY THE CONTRACTOR SHOULD BE PERFORMED TO AID IN DETERMINING THE COMPLETE EXTENT OF WORK INVOLVED.

B. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL NECESSARY POWER OUTAGES WITH THE OWNERS REPRESENTATIVE PRIOR TO PROCEEDING WITH SUCH WORK TO INSURE THAT OPERATIONS IN ADJACENT OCCUPIED PORTIONS OF THE BUILDING ARE NOT INTERRUPTED OR RESTRICTED WITHOUT PRIOR APPROVAL.

C. ALL EXISTING BRANCH CIRCUITS BEING REMOVED SHALL BE REMOVED AS COMPLETELY AS POSSIBLE. EXISTING CONDUCTORS SHALL BE REMOVED COMPLETELY FROM THEIR RACEWAYS, DISPOSED OF AS SCRAP, REMOVED FROM SITE AND NOT REUSED EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE. WHERE AN EXISTING DEVICE IS SHOWN REMOVED FROM AN EXISTING CIRCUIT, NEW WIRING SHALL BE PROVIDED AS REQUIRED TO ENSURE CONTINUITY OF EXISTING CIRCUIT. ELECTRICAL RACEWAYS WHERE STUBBED FROM A CONCRETE FLOOR OR WALL SHALL BE CHISELED 2 INCHES BELOW SURFACE, GROUTED AND SCREED.

D. ALL EXISTING LIGHT FIXTURES, LAMPS, AND ELECTRICAL EQUIPMENT SHOWN TO BE REMOVED SHALL BE REMOVED BY THE CONTRACTOR. EXISTING FIXTURES AND EQUIPMENT CONSIDERED SALVAGEABLE BY THE OWNER AND NOT SHOWN TO BE REUSED SHALL BE TURNED OVER TO THE OWNER OR REMOVED FROM SITE AS DIRECTED BY OWNER. LAMPS AND BALLASTS THAT ARE CONSIDERED AS HAZARDOUS WASTE SHALL BE DISPOSED OF PROPERLY.

E. ALL EXISTING SURFACE MOUNTED BACKBOXES, CONDUIT, WIREWAY, JUNCTION BOXES, ETC. SHOWN REMOVED SHALL BE REMOVED IN THEIR ENTIRETY. ALL RECESSED BACKBOXES, JUNCTION BOXES SHOWN REMOVED SHALL BE ABANDONED IN PLACE AND COVERED WITH STAINLESS STEEL COVER PLATES. ALL RECESSED CONDUIT SHALL BE ABANDONED IN PLACE AND CAPPED OFF IN A SUITABLE MANNER PER LOCAL INSPECTORS REQUIREMENTS.

F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALL, CEILING, OR OTHER BUILDING ELEMENTS WHICH ARE DISTURBED AS PART OF THE DEMOLITION OR INSTALLATION OF ELECTRICAL WORK.

G. CONTRACTOR SHALL PROVIDE SUITABLE FILL MATERIAL WHERE CONCRETE BASES ARE REMOVED. FILL MATERIAL SHALL BE THOROUGHLY TAMPED AND COVERED WITH APPROPRIATE GROUND COVERING AS DIRECTED BY ARCHITECT.

GENERAL ELECTRICAL NOTES

A. ALL WIRING SHALL BE INSTALLED IN CONTINUOUS RACEWAY.

B. ALL CONDUITS IN NEW WALLS, EXISTING STUD WALLS, OR IN AREAS WITH SUSPENDED CEILINGS SHALL BE INSTALLED CONCEALED.

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING, PAINTING, REPAIRING OR REPLACEMENT OF ALL WALLS, CEILINGS, OR OTHER BUILDING ELEMENTS WHICH ARE DISTURBED AS PART OF THE DEMOLITION OR INSTALLATION OF ELECTRICAL WORK.

D. LABELING FOR PANELBOARD DIRECTORIES, FIRE ALARM PANEL PROGRAMMING, ETC. SHALL USE ROOM NUMBERS ASSIGNED BY OWNER AND NOT ROOM NUMBERS LISTED ON DRAWINGS. LABELS ON PANELBOARD DIRECTORY SHALL INCLUDE A DESCRIPTION OF LOAD SUCH AS LIGHTS, RECEPTACLES, MECH. UNIT LOCATIONS, ETC.

E. MULTIWIRE BRANCH CIRCUITS AS DEFINED BY THE NATIONAL ELECTRICAL CODE (CIRCUITS WITH COMMON NEUTRAL) SHALL NOT BE USED, EXCEPTION: WHERE AN EQUIPMENT MANUFACTURER REQUIRES A MULTIWIRE BRANCH CIRCUIT FOR ONLY ONE UTILIZATION EQUIPMENT AND WHERE ALL UNGROUNDED CONDUCTORS OF THAT CIRCUIT ARE OPENED SIMULTANEOUSLY BY THE BRANCH CIRCUIT OVERCURRENT DEVICE.

F. A CABLE OR RACEWAY TYPE WIRING METHOD, INSTALLED IN EXPOSED OR CONCEALED LOCATIONS NEAR METAL-CORRUGATED SHEET ROOF DECKING, SHALL BE INSTALLED AND SUPPORTED SO THE NEAREST OUTER SURFACE OF THE CABLE OR RACEWAY IS NOT LESS THAN 6 INCHES FROM THE NEAREST SURFACE OF THE ROOF DECKING. EXCEPTION: RIGID METAL CONDUIT AND INTERMEDIATE METAL CONDUIT SHALL NOT BE REQUIRED TO MAINTAIN THIS CLEARANCE.

G. REFER TO MECHANICAL/ELECTRICAL COORDINATION SCHEDULE SHEET M3.1 FOR ADDITIONAL REQUIREMENTS FOR DISCONNECTS, MOTOR STARTERS, ETC.

three inches = one foot
one and one half inches = one foot
one inch = one foot
three quarters inch = one foot
one half inch = one foot
three eighths inch = one foot
one quarter inch = one foot
one eighth inch = one foot

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Revisions:	Date

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Drawing Title: ELECTRICAL SYMBOLS AND GENERAL NOTES

CONTRACT DOCUMENTS (CD-3) FINAL SUBMITTAL (100%)

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Project Number: 636-13-126
Building Number: ONE
Drawing Number: E0.1
Dwg. 16 of 18

Office of Construction and Facilities Management
Department of Veterans Affairs

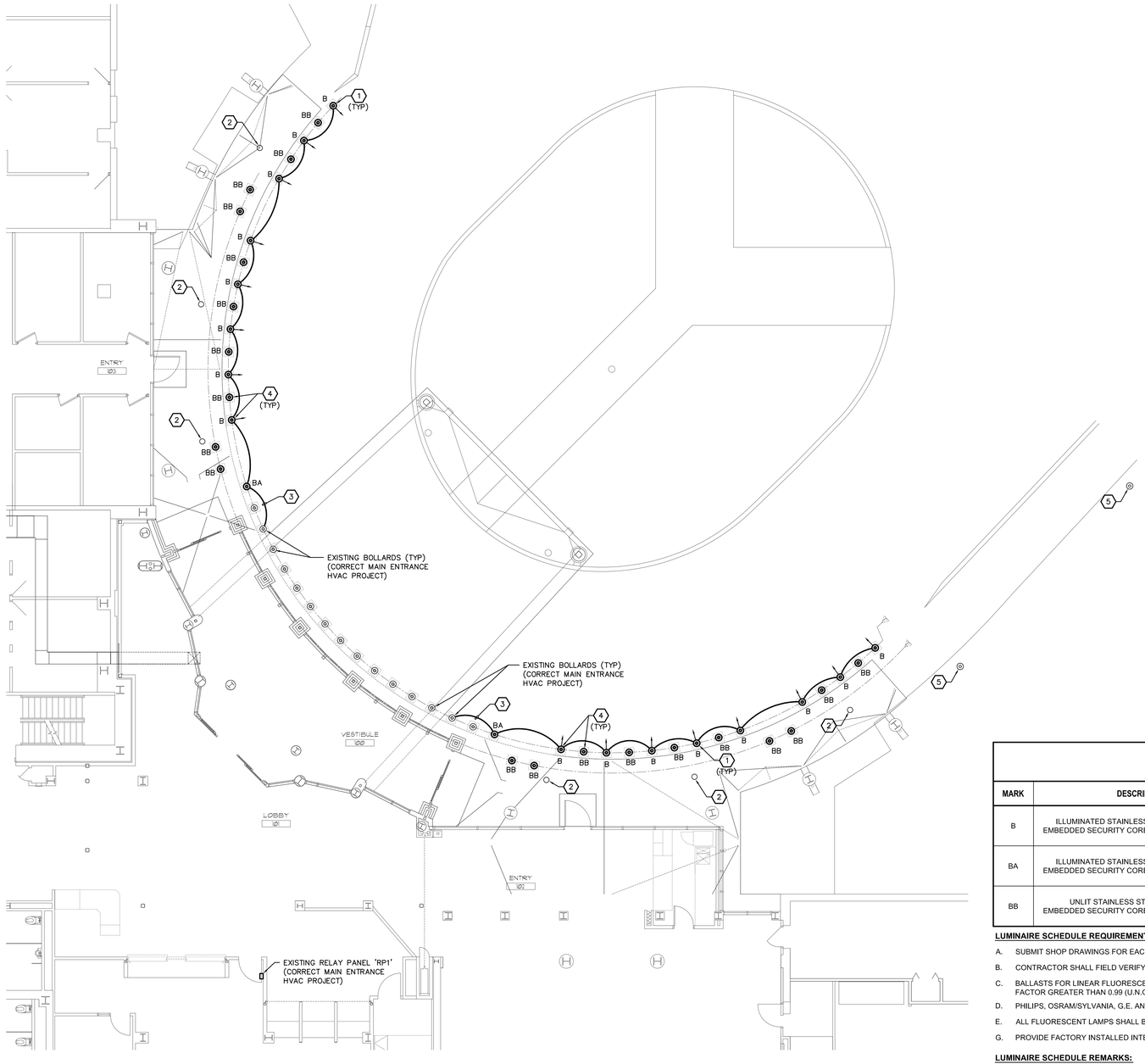
VA FORM 08-6231

SEE 'GENERAL ELECTRICAL DEMOLITION NOTES', SHEET E0.1, FOR ADDITIONAL ELECTRICAL REQUIREMENTS

SEE 'GENERAL ELECTRICAL NOTES', SHEET E0.1, FOR ADDITIONAL ELECTRICAL REQUIREMENTS

ELECTRICAL DEMOLITION KEYNOTES: (⬡)

1. ARROW INDICATES DIRECTION OF SHIELDING. 'OPEN' SIDE OF BOLLARD TO FACE SIDEWALK.
2. RELAMP EXISTING DOWNLIGHT WITH PHILIPS 100W WHITE SON HIGH PRESSURE SODIUM LAMP.
3. CONNECT TO STUBBED OUT CONDUIT FROM EXISTING BOLLARDS SERVED BY CIRCUIT RP1-1. PROVIDE NEW CONDUIT AND WIRING FOR NEW BOLLARDS WITH #8 MINIMUM WIRE SIZE FOR ENTIRE CIRCUIT.
4. BOLLARDS HAVE EMBEDDED SECURITY CORE FOR FORCE PROTECTION. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR MOUNTING CONDITIONS.
5. EXISTING LIGHTING BOLLARD TO BE REMOVED. CONTRACTOR TO ENSURE THAT ANY EXISTING ACTIVE CIRCUITS SHALL REMAIN INTACT AFTER REMOVAL OF BOLLARD. REMOVE ANY REMAINING UNUSED WIRING.



E4.1 PARTIAL FIRST FLOOR LIGHTING PLAN

SCALE: 1/8 INCH = 1 FOOT

12" 0 5' 10' 15'

NORTH

LUMINAIRE SCHEDULE

MARK	DESCRIPTION	MANUFACTURER	SERIES	CATALOG NO.	LAMP QTY	LAMP TYPE	FINISH	MOUNTING	INPUT WATTS	VOLTS	ACCEPTABLE MANUFACTURERS	REMARKS
B	ILLUMINATED STAINLESS STEEL BOLLARD WITH EMBEDDED SECURITY CORE AND 180° SCAPE SHIELD.	FORMS & SURFACES	LIGHT COLUMN SERIES 600	LCO-SEC-604 EMBEDDED SECURITY CORE 180° PERFORATED SHIELD (SCAPE)	2	REMARK 3	REMARK 2	BOLLARD	52 W	120 V	-	1,5
BA	ILLUMINATED STAINLESS STEEL BOLLARD WITH EMBEDDED SECURITY CORE AND 360° SCAPE SHIELD.	FORMS & SURFACES	LIGHT COLUMN SERIES 600	LCO-SEC-604 EMBEDDED SECURITY CORE 360° PERFORATED SHIELD (SCAPE)	2	REMARK 3	REMARK 2	BOLLARD	52 W	120 V	-	1,5
BB	UNLIT STAINLESS STEEL BOLLARD WITH EMBEDDED SECURITY CORE AND 360° SCAPE SHIELD.	FORMS & SURFACES	LIGHT COLUMN SERIES 600	REMARK 4	-	-	REMARK 2	BOLLARD	-	-	-	5

LUMINAIRE SCHEDULE REQUIREMENTS:

A. SUBMIT SHOP DRAWINGS FOR EACH LUMINAIRE, BALLAST, AND LAMP TYPE USED ON PROJECT.

B. CONTRACTOR SHALL FIELD VERIFY VOLTAGE OF ALL LUMINAIRES PRIOR TO ORDERING.

C. BALLASTS FOR LINEAR FLUORESCENT T5 & T5HO LAMPS SHALL BE GE ULTRASTART SERIES (OR EQUAL BY ADVANCE OPTANIUM SERIES). BALLAST CHARACTERISTICS SHALL BE: PROGRAMMED START, OPERATING VOLTAGE RANGE OF 120-277V ±10%, BALLAST FACTOR GREATER THAN 0.99 (U.N.O.), THD OF 10% OR LESS, PF GREATER THAN 0.95, AND A FIVE YEAR WRITTEN REPLACEMENT WARRANTY FROM DATE OF MANUFACTURE.

D. PHILIPS, OSRAM/SYLVANIA, G.E. AND VENTURE ARE ACCEPTABLE LAMP MANUFACTURERS.

E. ALL FLUORESCENT LAMPS SHALL BE LOW MERCURY TCLP COMPLIANT TYPE.

G. PROVIDE FACTORY INSTALLED INTEGRAL DISCONNECTING MEANS FOR FLUORESCENT LIGHT LUMINAIRES PER 2011 NEC ARTICLE 410.130.(G). NOTE THAT EXCEPTION NO. 4 AND EXCEPTION NO. 5 WILL NOT BE ACCEPTED.

LUMINAIRE SCHEDULE REMARKS:

1. PROVIDE COLD WEATHER BALLAST RATED FOR NO HIGHER THAN -15°F MINIMUM STARTING TEMPERATURE.
2. CUSTOM RAL POWDERCOAT COLOR TO BE SELECTED BY ARCHITECT. SHIELDING FINISH TO MATCH HOUSING.
3. PROVIDE F24T5HO/830 3000K LAMP WITH AMALGAM TECHNOLOGY FOR LOW STARTING TEMPERATURES.
4. PROVIDE UNLIT VERSION OF LCO-SEC-604 BOLLARD WITH EMBEDDED SECURITY CORE AND 360° PERFORATED SHIELD (SCAPE).
5. BOLLARDS HAVE EMBEDDED SECURITY CORE FOR FORCE PROTECTION. REFER TO ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR MOUNTING DETAILS.

Revisions:	Date

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InfraStructure, LLC
ENGINEERING CONSULTING GROUP

Drawing Title: PARTIAL FIRST FLOOR LIGHTING PLAN

CONTRACT DOCUMENTS (CD-3) FINAL SUBMITTAL (100%)

Project Title: UPGRADE FORCE PROTECTION FRONT ENTRANCE

Location: VAMC Omaha Nebraska

Date: MAY 10, 2013 | Checked: RJH | Drawn: SPG

Project Number: 636-13-126

Building Number: ONE

Drawing Number: E1.1

Dwg. 17 of 18

Office of Construction and Facilities Management

Department of Veterans Affairs

VA FORM 08-6231

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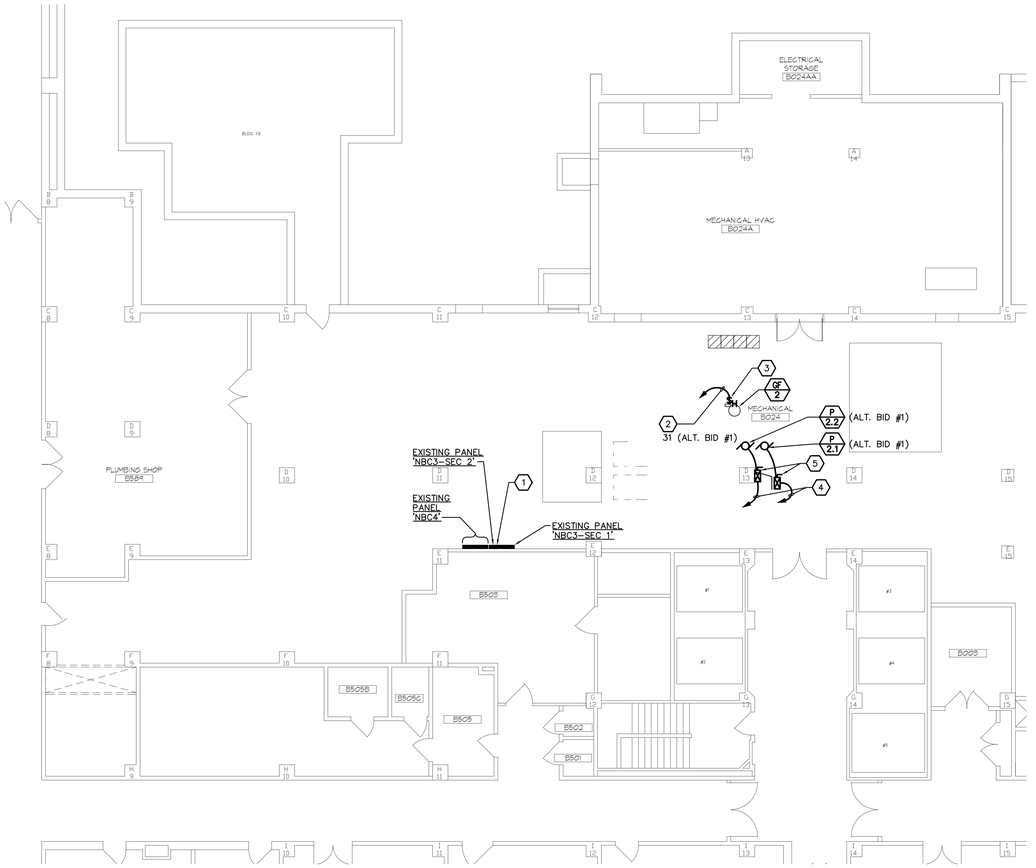
SEE 'GENERAL ELECTRICAL NOTES', SHEET E0.1, FOR ADDITIONAL ELECTRICAL REQUIREMENTS

ELECTRICAL KEYNOTES: (⬡)

1. PROVIDE 2-20 AMP, 3 POLE CIRCUIT BREAKERS COMPATIBLE WITH EXISTING PANEL (GE) AND INSTALL IN AVAILABLE SPACE IN EXISTING PANEL 'NBC3-SEC 2'. NEW CIRCUIT BREAKER AIC RATING SHALL MATCH EXISTING. THIS WORK IS PART OF ALTERNATE BID NO. 1.
2. EXTEND NEW CIRCUIT TO EXISTING PANEL 'NBC3-SEC 2' AND CONNECT TO EXISTING SPARE 20 AMP, SINGLE POLE CIRCUIT BREAKER AT CIRCUIT POSITION INDICATED.
3. MOUNT SWITCH TO STRUCTURAL FRAME OF GLYCOL FEED SYSTEM EQUIPMENT. CONNECT EQUIPMENT CONTROL PANEL. PROVIDE CONNECTION FROM CONTROL PANEL TO PUMP MOTOR PER MANUFACTURERS RECOMMENDATIONS.
4. EXTEND NEW CIRCUIT TO EXISTING PANEL 'NBC3-SEC 2' AND CONNECT TO ONE OF TWO NEW 20 AMP, 3 POLE CIRCUIT BREAKERS INSTALLED AS PART OF KEYNOTE 1. THIS WORK IS PART OF ALTERNATE BID NO. 1.
5. MOUNT COMBINATION MOTOR STARTER AND SAFETY SWITCH TO COLUMN, ONE ABOVE ANOTHER, WITH TOP OF UPPER STARTER/SWITCH NO HIGHER THAN 6'-0" ABOVE FINISHED FLOOR.



1 E2.1 PARTIAL BASEMENT ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"

PLAN NORTH

Revisions:	Date

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three inches = one foot 6"
one and one half inches = one foot 1 6"
one inch = one foot 2 0 6"
three quarters inch = one foot 2 0 6"
one half inch = one foot 4 0 1
three eighths inch = one foot 4 0
one quarter inch = one foot 8 0
one eighth inch = one foot 16 0 4